AR Record

RMRS Rocky Mountain Remediation Services, L.L.C
protecting the environment

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:NSON C A		
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JTTON S R		
RICE KELLY		
HEELER M		
OLF, K		
emski, Mike	X	X
wdery, Craig	X	X
rimrose, A.	X	X
MRS (T130G)	X	
F CORRES CONTROL	X	
RAFFIC		
ATS/T130G		

CLASSIFICATION		
CNI		
NCLASSIFIED	X	
ONFIDENTIAL		
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AUTHORIZED CLASSIFIER SIGNATURE
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ALP:LAA

December 29, 1998 98-RF-06109

Norma Castaneda
ES&H Program Assessment
DOE,RFFO

TRANSMITTAL OF QUATERLY STATUS REPORT FOR THE MOUND SITE PLUME PROJECT – ALP-054-98

Action Delivery of Quarterly Status Report for the Mound Site Plume Treatment Project by December 31, 1998

Rocky Mountain Remediation Services (RMRS) is pleased to deliver the attached copy of the Quarterly Report for the Mound Site Plume Treatment Project in fulfillment of the scheduled milestone due December 31, 1998

If there is any additional information you like to have incorporated into the existing format for the next quarter's project report, please do not hesitate to contact Annette Primrose at extension 4385 or pager 212-6338

A L Primrose
Project Manager
Groundwater Remediation

Original and 1 cc – N Castaneda

Attachment
As Stated

Cc
\- Butler – Kaiser-Hill
Γ C Greengard – Kaiser -Hill

ADMIN RECORD 1/7
BZ-I113-B00026

QUARTERLY REPORT
FOR THE
MOUND SITE PLUME TREATMENT PROJECT

OCTOBER 1998 THROUGH DECEMBER 1998

December 29, 1998

INTRODUCTION

The Mound Site Plume Treatment System collects and treats the contaminated groundwater plume derived from the Mound Site to the groundwater Action Level Framework Tier II level concentrations defined in the Rocky Flats Cleanup Agreement (RFCA) (DOE, 1996), and demonstrates the feasibility of using this system on other contaminated groundwater plumes

Installation of a 230-foot long below-grade impermeable barrier membrane/collection system along with two treatment cells was completed on September 18, 1998 Startup and repair activities were completed and the EPA SITE program began effluent sampling on October 28, 1998 This was performed after the EPA SITE Program and Rocky Flats Environmental Technology Site (RFETS) personnel agreed that the tap water emplaced in the reactor vessels during construction had been displaced by contaminated groundwater from the Mound Site plume This report covers the activity and available data for the quarter from October 1 to December 31, 1998 Completion of the installation and repairs to the treatment system during this quarter limits the detail that can be provided

The Mound Site Plume Treatment Project was a cooperative effort between RFETS and the Department of Energy Subsurface Contaminant Focus Area (EM-50), with support from the US Environmental Protection Agency (EPA) SITE Program The Mound Site Plume Treatment Project employs innovative technology for the collection and treatment of contaminated groundwater containing chlorinated organic contamination and low levels of radionuclides Table 1 shows the constituents greater than Tier II levels from water collected in 1995 at the SW059 seep below the Mound Site, which represents the majority of the water collected by this system

The project has had no safety issues The repairs identified during the startup and shakedown period have been completed The lessons learned from the installation and startup of the Mound Site Plume Treatment Project were incorporated into both the East Trenches project and the Solar Pond Plume project

PROJECT EVENTS

The two treatment cells each contain 8 feet of iron filings that act as the treatment medium for the contaminated water With proper maintenance, the life expectancy of iron filings is from 5 to 10 years The surface of the iron filings require regular raking with an asphalt rake to prevent formation of a crust A delay in the startup of the maintenance during the startup and shakedown period allowed a crust to form on the surface of the iron filings layer in the first treatment cell The crust formed from contact with the contaminated groundwater for the period from mid-July through August The crust was mottled tan and rust-colored, and was up to 2 inches thick and was broken-up with a

concrete vibrator Pieces of the crust were collected on December 16 for isotopic analysis, with results expected on January 18, 1999 The crust will be removed from the treatment cell and appropriately disposed based on the results of the samples

Leaks in the treatment system were detected and repaired during the startup and shakedown period with no release of contaminated groundwater. However, a December 1st investigation into additional piping problems at the treatment system revealed a small leak from the inlet pipe into the first treatment cell Contaminated groundwater dripped back underground in the plume area when water levels in the treatment vessel rose over approximately one foot over the level of the inlet pipe during leak testing The amount of water released into the ground could not be quantified, but was likely small because of the location of the leak, and because the inlet pipe is under low pressure as the system is gravity fed No spill of untreated water into South Walnut Creek took place The occurrence was reported with tracking number 98-0730 A fact finding and path forward meeting were held and the appropriate repairs were performed for this and the other identified leak Pressure and static head tests were then conducted to verify that the system was functioning as designed Final repairs were completed on December 11, 1998 Backfill and compacting were finished on December 14 Installation of valve labels and the construction of a gravel path to the treatment cells also took place during this time period

Intermittent flow rate tracking took place from July through November due to insufficient battery power to continuously operate the tracking system The problem was corrected by replacing instrumentation, improving the alignment of the solar panel that charges the battery and reducing the data collection interval from once every 30 seconds to once every minute to reduce drain on the battery Data collection has been continuous following these changes which were completed on November 18, 1998

The system was designed so that no freeze protection will be necessary During the December 1998 cold snap, no ice was observed within the system indicating that the burial depth does provide sufficient insulation to prevent freezing

TREATMENT EFFECTIVENESS

Available flow rates from the treatment system for the October-November period are shown on Figure 1 The lines shown connect the average flow rates over approximately a 24-hour period intermittently during the two months The flow rate can range from zero to slightly over 8 gallons per minute with averages changing due to precipitation and testing or repairs High initial flow rates were attributed to groundwater storage within the collection trench Flow rates then decreased over time Water levels within the collection trench are shown in Table 2 and were determined by 5 piezometers (P1 through P5)

Table 1 Seep SW059 Contaminants of Concern Greater than Tier II Groundwater or Surface Water Action Levels in 1995 (from the Mound Site Plume Decision Document - DOE, 1997)

Chemical Name	Min Value	Max. Value	Avg Detect	No De-tects	GW Tier I Action Levels	GW Tier II Action Levels	SW Action Levels	GW Back-ground	SW Back-ground	Action Level Exceeded
Total Americium-241 (pCi/l)	0	0.25	0 08	7	15	0 15	0 15**	0 03	0 02	GW Tier II and SW
Total Uranium Isotopes (pCi/l)	17 6	17 6	17 6	1	NA	NA	10	NA	1 63	SW
Total Uranium-233,-234 (pCi/l)	2.81	5 4	3 69	6	298	3	NA	85 3	1.59	U233+D only above GW Tier II
Total Uranium-238 (pCi/l)	2.25	5 03	3 16	6	77	1	NA	60 3	1.23	GW Tier II
Carbon Tetra-chloride (ug/l)	3	120	29.29	14	500	5	5	NA	NA	GW Tier II and SW
Chloroform (ug/l)	5	25	8 5	14	10,000	100	6	NA	NA	SW
Methylene Chloride (ug/l)	0 1	0 3	0 14	6	500	5	5	NA	NA	GW Tier II and SW
Tetrachloro-ethene (ug/l)	1	21	9 29	14	500	5	5	NA	NA	GW Tier II and SW
Trichloroethene (ug/l)	5	71	12 79	14	500	5	5	NA	NA	GW Tier II and SW
Vinyl Chloride (ug/l)	0 7	3	0 55	4	200	2	2	NA	NA	Max value above GW Tier II and SW

Note. Background values are equal to the background mean plus two standard deviations
** A surface water action level of 0.05 pCi/l for Americium 241 will be met until January 1998

Figure 1. Effluent Flow Rates

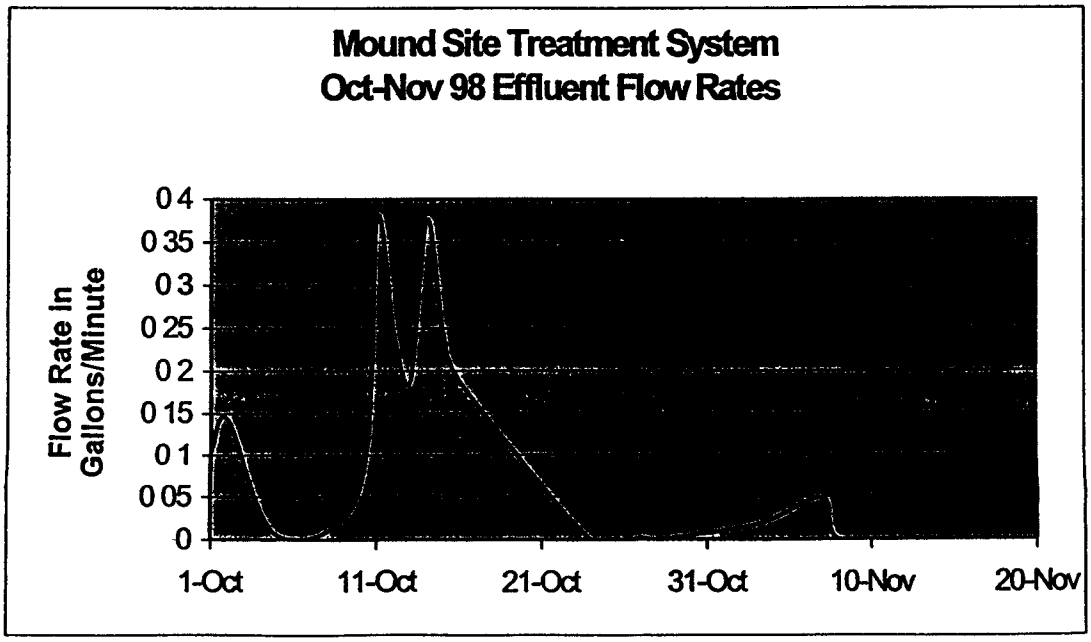

Table 2. Piezometer Water Levels (showing levels measured in the collection trench)

Date	Piezometer	Water Level (in feet below top of casing)
8/05/98	P1	dry
	P2	11 43
	P3	8 84
	P4	8 91
	P5	11 91
10/09/98	P1	dry
	P2	10 55
	P3	7 8
	P4	7 93
	P5	not measured
10/22/98	P1	dry
	P2	11.1
	P3	8.47
	P4	8.53
	P5	11.51
10/28/98	P1	dry (TD - 10 9 feet)
	P2	10 6
	P3	8 0
	P4	8 0
	P5	not measured

ABLE 3 Mound Plume Treatment System Analytical Results (Preliminary) in ug/l

cation/Date	Effluent	09/22/98	Effluent Trip Blank	09/22/98	Collection Sump	11/04/98	Top of Reactor 1 (influent)	11/04/98	Effluent	11/04/98	Trip Blank	11/04/98
mple Number	ETI-R2E S01 092298		ETI R2E T01-092298		ETI-SMP-S4-S 01-110498		ETI R1I S 01-110498		ETI-R2E-S-01-110498		ETI-TB-010110498	
rameter	Result	Detection Limit	Result	Detection Limit	Result	Detection Limit	Result	Detection Limit	Result	Detection Limit	Result	Detection Limit
etone	ND	10 0	ND	10 0	ND	25 0	ND	25 0	180 0	83 0	ND	10 0
nzene	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
modichloromethane	ND	1 0	ND	1 0	ND	10 0	ND	10 0	ND	17 0	ND	1 0
moform	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
momethane	ND	2 0	ND	2 0	ND	5 0	ND	5 0	ND	17 0	ND	2 0
rbon disulfide	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
rbon tetrachloride	ND	1 0	ND	1 0	57 0	2 5	52	2 5	ND	8 3	ND	1 0
lorobenzene	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
romochloromethane	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
loroethane	ND	2 0	ND	2 0	ND	5 0	ND	5 0	ND	17 0	ND	2 0
loroform	1 0	0 5	ND	0 5	23 0	2 5	21	2 5	ND	8 3	ND	0 5
loromethane	ND	2 0	ND	2 0	ND	5 0	ND	5 0	ND	17 0	ND	2 0
-Dichloroethane	ND	1 0	ND	1 0	1 6J	2 5	1 3J	2 5	ND	8 3	ND	1 0
Dichloroethane	ND	1 0	ND	1 0	0 55J	2 5	0 53J	2 5	ND	8 3	ND	1 0
-Dichloroethane	ND	1 0	ND	1 0	4 0	2 5	3 8	2 5	ND	8 3	ND	1 0
1,2 Dichloroethene	ND	0 5	ND	0 5	30 0	1 2	27	1 2	ND	4 2	ND	0 5
Dichloroethane (total)	ND	1 0	ND	1 0	26 0	2 5	23	2 5	ND	8 3	ND	1 0
-Dichloropropane	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
1,3 Dichloropropene	ND	1 0	ND	0 5	ND	2 5	ND	2 5	ND	8 3	ND	1 0
s 1,3-Dichloropropene	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
ylbenzene	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
exanone	ND	5 0	ND	5 0	ND	12 0	ND	12 0	ND	42 0	ND	5 0
thylene chloride	0 76 J	1 0	0 28 J	1 0	0 75J	2 5	0 97J	2 5	2 6J	8 3	0 99J	1 0
ethyl 2-pentanone	ND	5 0	ND	5 0	ND	12 0	ND	12 0	ND	42 0	ND	5 0
rene	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
2,2-Tetrachloroethane	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
rachloroethane	ND	1 0	ND	1 0	35 0	2 5	31	2 5	ND	8 3	ND	1 0
uene	0 14 J	1 0	0 13 J	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
1 Trichloroethane	ND	1 0	ND	1 0	4 6	2 5	4 2	2 5	ND	8 3	ND	1 0
2 Trichloroethane	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
hloroethane	ND	1 0	ND	1 0	64 0	2 5	59	2 5	ND	8 3	ND	1 0
yl chloride	ND	2 0	ND	2 0	1 0J	5 0	0 83J	5 0	ND	17 0	ND	2 0
nes (total)	ND	1 0	ND	1 0	ND	2 5	ND	2 5	ND	8 3	ND	1 0
utanone (MEK)	ND	5 0	ND	5 0	ND	12 0	ND	12 0	29J	42 0	ND	5 0